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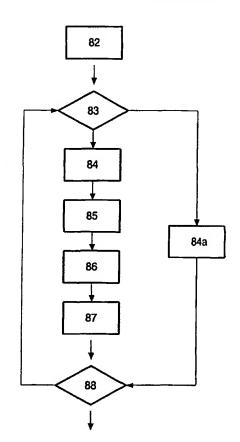
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(54) Title: METHOD AND ARRANGEMENT FOR DETERMINING THE POSITION OF AN OBJECT IN AN MR DEVICE



(57) Abstract: The invention relates to a method of determining the position of an object, such as for example a medical intervention instrument, located in the examination area of an MR device. For this purpose, a high-frequency magnetic field is generated in the examination area, which high-frequency magnetic field runs essentially parallel to a main magnetic field that is active at the same time. In the process, a component of the high-frequency magnetic field that is perpendicular to the main magnetic field is produced in the vicinity of conversion means fitted on the object, on account of which perpendicular component of the high-frequency magnetic field a nuclear resonance signal is excited. In conjunction with a gradient field, the nuclear resonance signal is detected and evaluated, so that the position of the object can be determined. Furthermore, the invention relates to an MR device and to specific components for carrying out the method.



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B. FIELDS SEARCHED

 $\begin{array}{ll} \mbox{Minimum documentation searched (classification system followed by classification symbols)} \\ \mbox{IPC 7} & \mbox{G01R} \end{array}$

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

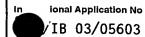
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC, BIOSIS, WPI Data

	NTS CONSIDERED TO BE RELEVANT	
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 397 094 B1 (LUEDEKE KAI-MICHAEL ET AL) 28 May 2002 (2002-05-28) column 2, paragraph 3 -column 3-6; figures 3,4	3-8
X	US 5 445 151 A (DARROW ROBERT D ET AL) 29 August 1995 (1995-08-29) claims 1-6; figure 2	3-8
A	US 6 317 091 B1 (OPPELT ARNULF) 13 November 2001 (2001–11–13) column 2, paragraphs 4–7; figures 1,2	3-8
A	WO 00/13586 A (NEVO EREZ ;ROBIN MEDICAL INC (US)) 16 March 2000 (2000-03-16) claims 1-20	7,8

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C.(Continua	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	/18 03/05603
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A		7,8
	EP 0 768 539 A (MARCONI GEC LTD) 16 April 1997 (1997-04-16)	7,0
	claims 1-10	
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formation on patent family members

/IB 03/05603	In tions	Application No	
	IB	03/05603	

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	nt document search report		Publication date		Patent family member(s)		Publication date
US 6	397094	B1	28-05-2002	DE EP JP	19800471 0928972 11244260	A2	15-07-1999 14-07-1999 14-09-1999
US 5	445151	Α	29-08-1995	NONE			
US 6	317091	B1	13-11-2001	DE JP	19844762 2000102521		06-04-2000 11-04-2000
WO 0	013586	A	16-03-2000	AU CA EP JP WO	5806299 2341662 1112025 2002524125 0013586	A1 A1 T	27-03-2000 16-03-2000 04-07-2001 06-08-2002 16-03-2000
EP O	768539	Α	16-04-1997	DE EP JP US	69631008 0768539 9108200 5819737	A2 A	22-01-2004 16-04-1997 28-04-1997 13-10-1998